French, who by the cross-fertilisation of the hardy *Citrus triptera* and an ordinary orange have succeeded in producing a hardy variety of that fruit. Matters are as yet only in the experimental stage, but the possibility of success has been demonstrated. There is no reason whatever why our own experimentalists should not succeed with apples and plums. Earlier varieties, later varieties, hardier varieties, are all well within the range of possibility, and would be certainly forthcoming if we abandoned our present methods of chance selection and haphazard cross-breeding in favour of careful experiment and rational procedure.

Not only are experimental farms wanted for local purposes, but research stations wherein results might be obtained of universal application.

The Royal Horticultural Society has in its new garden at Wisley, presented by Sir Thomas Hanbury, a splendid opportunity before it, and it is to be hoped that it will not be backward in turning it to account. The fruit farm at Woburn, to which allusion has already been made, sets an example which might be followed and extended with advantage. Already important results with reference to the employment of manures have been obtained there which, though of a negative character, are none the less valuable.

NOTES.

The annual meeting of the British Medical Association began at Leicester on Monday last. On Tuesday, Dr. G. Cooper Franklin, the president for the year, delivered his address, and the association's gold medal of merit was presented to Sir Constantine Holman and Dr. Andrew Clark. The Stewart prize was presented to Mr. W. H. Power, C.B.

The British Electro-Therapeutic Society is holding a three days' meeting at Leicester this week. The following subjects are announced for consideration :—the present position of the treatment of carcinoma and sarcoma by electrical methods, neurasthenia, the X-rays in the diagnosis of pulmonary disease, and stereoscopic radiography, while a report will be given on the milliamperemeter as a measure of X-ray production.

The forty-second annual meeting of the British Pharmaceutical Conference was opened at Brighton on Tuesday last. The organisation, it will be remembered, is distinct from the Pharmaceutical Society, and is solely concerned with "the encouragement of pharmaceutical research, and the promotion of friendly intercourse and union amongst pharmacists." The president, Mr. W. A. H. Naylor, delivered his address, and the reading and consideration of papers took place. The meeting terminates to-day.

Several earthquake disturbances are reported. According to a Central News telegram from Vienna, the seismograph at the Pola Hydrographic Station registered between 3.55 a.m. and 4.17 a.m. on Sunday last the occurrence of a severe and protracted seismic disturbance at an estimated distance of some 3720 miles, and telegrams from St. Petersburg, through Reuter's Agency, state that earthquakes occurred in Siberia at the following places and times :—at Chita at 10.25 on Sunday morning last; at Marünsk, in the Government of Tomsk, at about 9 a.m. of the same day; and at Kiakhta at 10 o'clock on the morning of Tuesday last. An earthquake is stated also to have taken place at Menstrie and Blair-Logie, and to have been felt in other parts of Scotland, shortly after midnight of Sunday last.

The committee appointed in April last to consider the advisability or otherwise of confederating the principal London medical societies has now presented its report (one favourable to confederation), which, with certain minor alterations and additions, has been adopted. According to the *British Medical Journal,* it is suggested that the new society should be known as either the Royal Society of Medicine or the Royal Academy of Medicine, and that at first it should comprise the following sixteen sections :—(1) anæsthetic; (2) clinical; (3) dermatological; (4) diseases of children; (5) epidemiological; (6) laryngological, otological, and rhinological; (7) medical; (8) mental medicine (psychiatry); (9) neurological; (10) obstetrical and gynæcological; (11) odontological; (12) ophthalmological; (13) pathological; (14) State medicine; (15) surgical; (16) therapeutical, including general therapeutics, pharmacology, electrotherapeutics, balneology, and climatology. The hope is expressed that in the early future an anatomical and physiological section may be formed.

The arrangements for the meeting in London of the International Statistical Institute, which is to take place from July 31 to August 4, are now practically complete. The proceedings will be opened at the Imperial Institute by the Prince of Wales, who will deliver an address. Addresses will also be given by the president of the institute, Dr. von Inama-Sternegg, and by the president of the Royal Statistical Society, the Earl of Onslow, after which the following communications will be presented and discussed :—superficie et population du monde; balance economique des nations; mortalité des grandes villes; statistique de la tuberculose; fécondité des mariages; statistique des transports internationaux; accidents du travail; international comparison of workmen's wages; recensements industriels et statistique du chômage; l'enseignement supérieur; import and export statistics; répercussion des droits de douanes; international agricultural statistics; valeurs mobilières; some subjects connected with pauperism; and discours sur l'avenir de la statistique.

Particulars have been issued as to the arrangements which have been made for the autumn meeting of the Iron and Steel Institute. The meeting will be held at Sheffield from September 26 to 29, and the following papers have been offered for reading :—On the metallurgical department of Sheffield University, by Prof. J. O. Arnold; on the thermal transformation of carbon steels, by Prof. J. O. Arnold and A. McWilliam; on the nature of troostite, by Dr. C. Benedicks; on the occurrence of copper, cobalt and nickel in American pig irons, by Prof. E. D. Campbell; on pipe in steel ingots, by J. E. Fletcher; on steel for motor-car construction, by L. Guillet; on the presence of greenish-coloured markings in the fractured surface of test pieces, by Captain H. G. Howorth, R.A.; on overheated steel, by A. W. Richards and J. E. Stead, F.R.S.; on segregation in steel ingots, by B. Talbot; on a manipulator for steel bars, by D. Upton; on machinery for breaking pig iron, by C. Walton; on the influence of carbon on nickel and iron, by G. B. Waterhouse.

The congress of the International Society of Surgery will this year be held in Brussels. The meetings will take place from Monday, September 18, to Saturday, September 23, and will be under the presidency of Prof. Theodor Kocher, of the University of Berne. Among the subjects to be discussed are :—the value of the examination of the blood in surgery; the treatment of prostatic hypertrophy; surgical intervention in non-cancerous diseases of the stomach; treatment of articular tuberculosis; the treatment of peritonitis; and the diagnosis of surgical diseases of the kidney. The official languages of the congress are English, French, German, and Italian. The English delegate is Mr. R. Harrison, 6 Lower Berkeley Street, W.

Science gives particulars of the sixth International Congress of Applied Chemistry, which is to take place in Rome in the spring of next year. The congress will be divided into eleven sections as follows:—Analytical chemistry, apparatus and instruments; inorganic chemistry and industries related thereto; metallurgy and mining, explosives; organic chemistry and industries related thereto; technology and chemistry of sugar; fermentation and starch; agricultural chemistry; hygiene; photochemistry, photography; electrochemistry, physicochemistry; laws, political economy and legislation in relation to industrial chemistry. The languages to be used in the discussion are Italian, French, German, and English. The minutes of the proceedings of the session will be in Italian. The secretary of the congress is Prof. V. Villavecchia, Central Customs Laboratory, Rome.

IT is stated in *La Nature* that the seventh International Congress of Zoology is to be held at Boston, U.S.A., in August, 1907, under the presidency of Prof. Agassiz. The Emperor Nicolas II. prize will be awarded on this occasion for monographs on the subject "Nouvelles recherches expérimentales sur la question des hybrides." The essays, either in manuscript or printed, should be addressed before June 1, 1907, to Prof. R. Blanchard, boulevard Saint-Germain, 226, Paris. The essays should be in French, though those written in German, Italian, or English will be admitted to the competition if accompanied by a summary in French.

IT has been decided by the Government of New Zealand to hold during the summer of 1906–7 (*i.e.* from November, 1906, to April, 1907) at Christchurch an international exhibition in which all nations are invited to participate. The object of the exhibition is educational, and to demonstrate the resources of the colony in food production, yield of minerals, the supply of raw materials, &c. Intending exhibitors may obtain full particulars from the secretary of the exhibition at Christchurch, New Zealand.

THE report of the special committee appointed by the Government of Bombay to consider the question of a public museum and library for Bombay has been issued. The estimated initial cost of the buildings alone is approximately ten lakhs, four of which are for the building devoted to art and archæology, and three for the science museum and public library respectively.

THE Paris correspondent of the *Lancet* states that a permanent committee to deal with the watering places and climatic stations in France has just been established by the Minister of the Interior. The committee, the honorary president of which is the Minister of the Interior, is to examine into the general needs of the places referred to, and to protect and develop them. The mayors and the medical men of the various watering places, the directors and the committees of *sociétés thermales,* are liable each in his turn to be summoned to serve on the committee for a period not exceeding three years.

THE sum of 150,000 kroner has been given by Dr. F. G. Gade, of the University of Christiania, to the city of Bergen for the establishment of a laboratory of pathological anatomy.

IT is intended to celebrate the jubilee of Prof. D. I. Mendeléeff on August 30, this eminent man of science having completed his fiftieth year of public professional service on June 13 last.

M. J. DYBOWSKI, inspector-general of agriculture in the French colonies, has been elected an officer of the Légion d'honneur, and Dr. Giraud, head of the scientific mission to Martinique, has been raised to the dignity of chevalier.

A PORTRAIT medallion, in marble, of Sir William Geddes, the late principal of the University of Aberdeen, has been completed, and will be placed in the Geddes transept of the library at King's College. Its unveiling will probably take place at the beginning of the winter session. A meeting in furtherance of the proposed memorial to the late Prof. James Nicol was held recently in Marischal College, when a number of letters from geologists and old pupils of Prof. Nicol were read, the general tenor of which favoured the placing of a portrait tablet in bronze in the geological museum. There will be, it is hoped, a formal inauguration of the memorial during the centenary celebrations of next year.

THE council of the Royal Meteorological Society, being desirous of advancing the general knowledge of meteorology and of promoting an intelligent public interest in the science, has appointed a lecturer who is prepared to deliver lectures to scientific societies, institutions, and schools on payment of a moderate fee and the cost of travelling expenses, the subjects being:—how to observe the weather; weather forecasting; climate; rainfall; thunderstorms; meteorology in relation to agriculture, health, &c. The society is also prepared to lend and fit up a complete climatological station for exhibition, showing the necessary instruments in position and ready for use, and to lend in return for a nominal amount sets of lantern slides illustrating meteorological phenomena. Further particulars as to the scheme can be obtained from the assistant secretary of the society.

IN the report for 1904 of the hydrographer of the Admiralty which has just been issued as a Parliamentary paper, reference is made to the retirement, after twenty years' service, of Rear-Admiral Sir W. J. L. Wharton, K.C.B., F.R.S. During the year under review, 482 rocks and shoals dangerous to navigation were reported. Of these 65 were notified by surveying vessels, 31 by other ships in the British Navy, 8 by vessels not in the navy, 26 were struck, and 352 were reported by colonial and foreign Governments; 1139 miles of coast line were charted, and an area of 3993 square miles sounded. During the year the number of charts printed for use in the Royal Navy, the Government departments, and by the public reached the total of 661,590 copies, and 1245 notices to mariners were issued.

THE vast deposits of magnetic iron sands in the province of Taranaki, in New Zealand, containing 60 per cent. of iron and 8·14 per cent. of titanic acid, have long attracted the attention of metallurgists, and numerous attempts have been made to smelt the ores by making them into bricks by the admixture of various substances. In 1873 works on which 17,350*l.* were spent proved a failure. A new departure has now been made by the Galbraith Iron and Steel Company, Ltd., of Auckland, by adopting the electric furnace for the direct production of steel from these sands, and by invitation of that company we were afforded an opportunity of witnessing the furnace in operation at the Brush Electrical Engineering Company's works at Loughborough, Leicestershire, on July 19. In the furnace invented by Mr. D. R. S. Galbraith, a constant stream of iron sand mixed with a given quantity of carbon is fed in at the top of the furnace, and travelling downwards by gravitation falls between and upon graphite bars forming resistances in the circuit, and finally leaves the furnace in the form of molten metal. The power is supplied by a single-phase alternator having an output of 100 kilowatts at 300 volts. This pressure is reduced to 18 volts by means of a transformer in close proximity to the furnace. The plant is, of course, an experimental one, and will require to be modified in several ways before it is used on a commercial scale.

DR. J. JOLY, F.R.S. (*Scientific Proceedings of the Royal Dublin Society*, vol. x., No. 34), being struck by the difficulties raised by the silting up of harbours on the south-east Irish coast, suggests the use of floating breakwaters moored to the bottom, but sufficiently deep to prevent response to the rise and fall of waves. They would thus be affected only by the tidal movements, and the dimensions "need not be extravagant where the conditions are not such as to require protection from deep-water waves." Two types are illustrated, the one cylindrical, with a submerged platform below, going down to about four fathoms, and the other more like a flat-bottomed ship, wider below and narrower above, with a hold full of water to increase the inertia. The author believes that in the seas inside the banks of Wicklow and Arklow such a mass might be assumed to be unaffected by wave-motion. The presence of such a breakwater, it is suggested, might even favourably increase the tidal scour.

WE have received from the Home Office part iv. of the general report on mines and quarries for 1903, containing comparative statistics relating to persons employed, output, and accidents at mines and quarries in the British colonies and in foreign countries. A good idea is given of the relative importance of mining in each country. In 1903 the number of persons engaged in mining and quarrying was 4,861,932, of which one-fifth were employed in the United Kingdom and one-third in the British Empire. More than half the total were employed in getting coal, of which the world's production was 881,002,936 tons. The world also produced 609,985 tons of copper, 491,672 kilograms of fine gold, 44,548,962 tons of pig iron, 892,899 tons of lead, 26,232,099 tons of petroleum, 12,818,253 tons of salt, 4,997,491 kilograms of fine silver, 98,295 tons of tin, and 570,440 tons of zinc. The death-rate from accidents throughout the world in 1903 is estimated at 1·83 per 1000, as compared with 1·93 per 1000 in 1902. For coal mines the accident death-rate of the United Kingdom is 1·26, and for the British Empire 1·33; while for France it is 1·02, for Germany 2·00, and for the United States 3·09. The death-rate for foreign countries generally is 2·14. It is evident that mining is conducted in Great Britain with a far smaller risk of accident to the workers than in most other countries.

THE meteorological results deduced from the observations taken at the Liverpool Observatory, Bidston, for the year 1904 have been published by Mr. W. E. Plummer. This observatory is maintained by the Mersey Docks and Harbour Board, and is one of the oldest and best equipped in the United Kingdom. Many years ago, the late Mr. W. W. Rundell prepared an elaborate discussion of the winds of Liverpool, which was published by the Meteorological Office. We notice that at the present time much attention is paid to this subject, which is naturally of the greatest importance for the shipping of the Mersey. Three anemometers of the Osler, Robinson, and Dines patterns are kept in efficient operation, and the maximum velocities and extreme pressures of the wind on the square foot are given for each day of the year, while the monthly and yearly summaries of the principal meteorological elements are expressed in imperial and metric measures. In the astronomical department, the transit instrument has been used continuously for the determination of time, and 2586 stars were observed during the year.

WE have received the annual report of the director of the Royal Alfred Observatory (Mauritius) for 1904; it contains the means and extremes of the meteorological elements and other general information; the actual observations will be published in a separate volume. From a table showing the observations of the direction of the various types of clouds, it is noteworthy that out of 821 observations the cumulus cloud was observed on 397 occasions, the cirrus cloud on only 66 occasions. The mean annual rainfall at ten selected stations was 13 inches below the average. The log-books of ships visiting the island were copied, and a daily journal of the weather over the Indian Ocean kept; it is noticeable that the number of vessels arriving annually between 1882 and 1904 have steadily decreased from 686 to 262. Photographs of the sun were taken daily whenever possible; 638 negatives were forwarded to the Solar Physics Committee. During the year 65 earthquakes were recorded. The observatory is still much troubled by depredations of white ants; numerous poisons have been tried for their extermination, the most efficacious being a solution of sal-ammoniac, turpentine, and methylated spirit, while the bookshelves are insulated with castor oil.

ONE of the scientific results of the annexation of the Philippines by the United States is the study of the ethnography of the group. Mr. W. Allan Reed has published a report on the Negritos of Zambales (vol. ii., part i., Ethnological Survey Publications, Manila, 1904). This is in reality only a sketch, as the author was only two months in the field, but his observations have undoubted value; doubtless a more thorough study will be made of these interesting people. The sixty-two plates which illustrate the paper add very considerably to its value, and by their means one can gain a very good idea of these jungle folk. A very useful album of Philippine types by D. Folkmar has been published by the Philippine Exposition Board, Manila; it contains eighty plates of photographs—full-face and side view of head—of inmates of Bilibid prison. The author has been careful to select typical examples from various districts, and opposite each plate are given certain measurements of the individual photographed, together with the averages of the same measurements taken on a large number of examples of that particular tribe. This is a very useful device, as it gives some sort of clue as to whether the individual figured is a fairly typical example of his tribe.

WRITING to *La Sicilia*, Prof. A. Ricco mentions that the crater of Etna is extending towards the north-west, and along the whole of the circumference, from north to west, is a great continuous fissure emitting steam and heated vapours. As the whole of the ground between this fissure and the margin must fall into the crater, he warns intending visitors of the need of caution in approaching the crater from the westwards, the direction from which it is most easily accessible.

IN the May number of the *Rend. Acc. Lincei* A. Pochettino describes the luminescence emitted by certain crystals under the action of radium and Röntgen rays.

The light given out by the platino-cyanides is, as a rule, vivid and partially polarised; it disappears directly the exciting cause is withdrawn. Crystals of scheelite, phosgenite, &c., show a feeble luminescence lasting several seconds after the removal of the incident rays.

IN part i. of a contribution to the *Scientific Transactions of the Royal Dublin Society*, vol. viii., p. 16, Prof. A. W. Conway discusses the partial differential equations of mathematical physics which in their general form are partial differential equations of the second order with constant coefficients reducible by transformation to three different classes. The problem has been attacked by Whittaker from the point of view of building up singular solutions from plane-wave solutions, but Prof. Conway adopts the reverse course, starting with the singular solution.

AMONG the results of the recent Röntgen congress at Berlin has been the authoritative adoption by a special committee of the following terminology:—Röntgenology = the study of Röntgen rays, Röntgenoscopy = observation by Röntgen rays, Röntgenography = photography by the rays, Orthoröntgenography in place of orthodiagraphy, Röntgenotherapy and the verb to röntgenise in their obvious meanings.

THE question "What is research?" is discussed by Prof. Henry S. Williams in the *Popular Science Monthly*. The author considers that research is not a special faculty possessed by the few, but a common faculty specially trained and systematically exercised by the few, for whom it becomes a tool of the highest value, and the means of opening up new fields of knowledge to mankind. At the same time, he directs attention to the detrimental effects of too much book learning on the power of research, and the need of a vivid imagination such as can be exercised and disciplined by the study of mathematics. Moreover, the man of research must be prepared to sacrifice his prospects in other directions and to work alone, "unappreciated and unapplauded" in most of his work, and Prof. Williams finally cautions teachers against tempting mere enthusiasts to undertake a task which requires for success the toughness of a soldier, the temper of a saint, and the training of a scholar. The subject of the article is one which might be very well discussed further in view of the large amount of "research," falsely so-called, which is now being turned out by persons not possessing any of these qualities, with the great danger of lowering public estimation of the importance of work of real scientific value.

DR. J. HETTINGER, writing from London in the *Physikalische Zeitschrift* for June 15, describes a new electrical connection for intensifying the resonance effects in wireless telegraphy.

THE Mathematical Association has reprinted the report of its committee on the teaching of elementary mathematics. In the same pamphlet are reproduced the "Little Go" regulations in geometry. We observe that Cambridge advocates the "hard pencil," which leads to so many indistinct figures in candidates' answers. A valuable mental training is thus omitted in not requiring candidates to make their drawings, as well as written work, clear and distinct to others. Moreover, even a soft pencil with a thick point has an advantage in showing that in any *constructive* proof lines must necessarily be of a certain thickness, and the conclusion is only established as approximately true. The beginner who learns this will be the better able to appreciate the deductive method at the proper time.

THE surfaces obtainable by the deformation of a hyperboloid of revolution of one sheet are discussed by Prof. Luigi Bianchi in the *Atti* of the Lincei Academy, xiv., 10. The determination of these surfaces is shown to depend on that of a certain class of imaginary pseudospherical surfaces, and the difficulty of the problem is reduced to that of characterising these latter surfaces, and thus presenting the final transformation formulæ in a real and definite form.

THE Institution of Electrical Engineers has published an address delivered to its students in January last by Mr. James Swinburne, M.Inst.C.E., on "The Theory of Electricity and the Value of its Study to Engineers." In it the author emphasises the desirability in many cases of mathematics being learnt through its applications, and points to the theory of electricity as affording a valuable introduction to the study of many of the most important branches of mathematical analysis. In conclusion the author says:—"I feel confident that enough has been said to make it evident that a modern engineer cannot consider his technical equipment complete without some knowledge of the theory of electricity; and if electrical development continues at the present rate it may soon be the most important branch of the science of engineering."

Biologisches Centralblatt of July 1 contains the report of an interesting address on the use and place of hypotheses, suppositions, and problems in biology, delivered by Mr. J. Reinke at the opening session of the International Botanical Congress at Vienna on June 12. That theories and hypotheses have a great and important place in science—indeed, that they are absolutely essential to its proper advance—the lecturer fully admitted; but, he added, it is necessary to remember that they are nothing more than theories, otherwise there is the greatest danger of their proving a hindrance and an illusion. A notable instance of this danger is afforded by the numerous phylogenies of animals and plants which are published from time to time, and are too often accepted as though they were solid facts, instead of being in most cases mere hypotheses, based not unfrequently on the very slenderest of foundations.

A YEAR ago we referred to notices of the occurrence of the striped hawk-moth in this country, and we observe that in the *Entomologist* for June and July several instances of the capture of the same species this season are mentioned. Possibly this handsome moth may become established in the south of England, at least for a time. In the July number Mr. G. W. Kirkaldy continues his popular synopsis of British water-bugs.

To the *Journal of Conchology* for July Mr. A. D. Darbishire contributes a discussion on Prof. Lang's experiments in breeding with the two common garden snails *Helix hortensis* and *H. nemoralis*. The writer denies that these experiments confirm the truth of Mendel's doctrine, *stricto sensu*; that is to say, they do not afford conclusive evidence of the existence in the gonads of *H. hortensis* of definite unit-bearing elements representing either five-banded or unbanded shells. It is added that much interest will attach to the description of the characters of the "dart" in the hybrid between the two species in question.

In the course of a paper published in the June number of the *American Naturalist* on the advantages presented by the common skate as a subject for demonstration to anatomical classes, Dr. H. W. Rand takes occasion to emphasise the importance of selecting generalised, in place of specialised, species for such demonstrations. A skate or a dog-fish is thus to be preferred to a bony fish, and similarly a salamander to a frog. As regards the choice between a skate and a dog-fish, although the former is a much more specialised type than the latter, it has the advantage of being more easily obtained and of being available for the greater part of the year. Moreover, its very specialisation happens to be an advantage to it as an object for demonstration, for not only does its flattened form render it admirably suited for dissection, but most of its organs are brought more or less nearly into one horizontal plane, so as to be capable of demonstration almost as if drawn in a diagram. Apropos to this article is a second, by Messrs. Rand and Ulrich, on posterior connections of the lateral vein in the skate. To the same issue Mr. E. W. Berry contributes an article on fossil sedges and grasses, with the description of a new Carex; and Mr. J. A. Cushman one on the fossil crabs from the well known Miocene beds of Gay Head, Mass., described long ago by Dr. E. Hitchcock, and subsequently by Sir C. Lyell.

An interesting paper on the gradual dissociation of mellitic acid is contributed by A. Quartaroli to the current number of the *Gazzetta Chimica Italiana,* vol. xxxv. p. 470. The author has measured the rate at which cane sugar is inverted by mellitic acid and by the corresponding mono-, di-, tri-, tetra-, and penta-sodium salts in one-tenth molecular solution. If the velocity constant for the free acid is represented by 100, the values for the various salts in the order given are respectively 40·5, 14·3, 2·2, 1·5, and 1·04. These numbers may be taken as a measure of the relative tendencies to ionisation of the six successive acid hydrogen atoms. Taking the ratio of the first to the second, of the second to the third, &c., the series 2·47, 2·82, 6·49, 1·47, 1·43 is obtained. These numbers are interesting, and the occurrence of a maximum value in the middle of the series suggests that the dissociation of mellitic acid is of abnormal character.

During the past week the Royal College of Surgeons of Edinburgh has been celebrating its four hundredth anniversary. The college, which is the oldest medical or surgical corporation in the United Kingdom, dates from July 1, 1505. The Royal College of Physicians of London, the next in point of age, was officially established some thirteen years later, *i.e.* in 1518. The current number of the *Lancet* contains an interesting account of the older institution.

The third number of the second volume of the Investigations of the Departments of Psychology and Education of the University of Colorado has reached us. Among other contributions, those in which Prof. Francis Ramaley deals with the teaching of botany and zoology, and Prof. Chas. A. Lory with the teaching of physics, are of special interest.

We have received a copy of "Southern Rhodesia, Information for Settlers," a small handbook issued by the British South Africa Company. The title sufficiently indicates the nature of the contents of the book, but it is worth noting that many of the numerous illustrations are of considerable geographical interest and value.

The report of the Royal Cornwall Polytechnic Society for 1904 has just been published, and bears testimony to the continued vitality of the society. One of the chief features of the society's activities during the year was its exhibition, in connection with which addresses and papers were given on electrical research, practical bee-keeping and management, and the geology, minerals and mines of Lelant, St. Ives, and Zennor. The first and last of these communications are to be found in the report before us, as is also an informing paper by Mr. C. C. Bignell on the aphides with their food plants; the volume likewise contains a detailed report of the work accomplished at the Falmouth Observatory.

The new number of the *Quarterly Review* contains only two papers dealing with scientific subjects, one on the national coal-supply, the other, by Sir Charles N. Eliot, on the Buddhism of Tibet. Both communications are very informative and eminently readable.

Messrs. R. and J. Beck, Ltd., of Cornhill, have just issued a catalogue of microscopes and apparatus specially suited for metallurgical work.

OUR ASTRONOMICAL COLUMN.

Astronomical Occurrences in August:—

Aug. 2. 1h. Mercury at greatest elongation (27° 18′ E.).
,, 2. 12h. 28m. to 14h. 6m. Transit of Jupiter's Sat. III. (Ganymede).
,, 4. Pallas in opposition to the sun.
,, 11–13. Epoch of Perseid meteoric shower (Radiant $45° + 57°$).
,, 12. Saturn. Major axis of ring $= 43''·82$, Minor axis $= 7''·47$.
,, 14. 10h. Venus in conjunction with Neptune, Venus 0° 48′ S.
,, 14. Partial eclipse of the moon visible at Greenwich.
14h. 39m. First contact with shadow.
15h. 41m. Middle of the eclipse.
16h. 43m. Last contact with shadow.
Magnitude of eclipse $= 0·292$. Moon sets 16h. 53m.
,, 15. 9h. Saturn in conjunction with moon, Saturn 1h. 43m. S.
,, 15. Venus. Illuminated portion of disc $= 0·680$, of Mars $= 0·854$.
,, 16. 11h. 49m. Minimum of Algol (β Persei).
,, 19. 8h. 38m. Minimum of Algol (β Persei).
,, 22. 21h. 0m. Saturn in opposition to the sun.
,, 23. 12h. 5m. to 12h. 46m. Moon occults σ^2 Tauri (Mag. 4·8).
,, 30. Total eclipse of the sun, partly visible at Greenwich.
11h. 49m. a.m. Beginning of the eclipse.
1h. 3m. p.m. Middle of the eclipse.
2h. 15m. p.m. End of the eclipse.
Magnitude of eclipse $= 0·786$. Sun's altitude at noon $= 48°$.

Photographs of the Martian Canals.—Since the opposition of Mars in 1901, persistent efforts have been made at the Lowell Observatory to secure photographs of the planet on which the canals could be seen definitely. After making a number of exposures with a camera in which the film was continuous, so that a large number of short exposures—as in the bioscope—could be made on the one film, Mr. Lampland succeeded in obtaining negatives which demonstrate indubitably the actual existence of the "canals" Nilosyrtis, Pyramus, Casius, Protonilus, Astaboras S., and Thoth. In addition to these, the "regions" Syrtis Major, Mare Erythræum, Mare Icarium, Hellas and the north polar cap, and the "oasis" Lucus Ismenius are plainly discernible. A photographic print from a negative secured on May 11 at 19h. 44m.–48m. (G.M.T.) on which these features are visible is affixed in the *Lowell Observatory Bulletin,* No. 21, accompanied by a drawing made by Mr. Lowell immediately before the exposure was made. Other photographs secured